

# A Study On Korea's Fire Administration Development

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*In the modern technological industrial society, utilization of fire is indispensable to the daily life nowadays. However, features of the industrialised society impose a big threat to the safety of human life, and thus require a more advanced means of fire-fighting administration. In regard to the characteristics of the fire-fighting, prevention and extinguishment of fires, major tasks for each have been outlined as: fire safety management, hazardous materials safety management, and advertising for the former; depolymment of fire-fighting apparatus to the scene of the fire in a quick and safe manner. Current problems involved in such tasks have been made clear as the lack of devices or capabilities of scientific cause-finding laboratory work, and resultant chance of false assumptions.*

*In addition to worn-out equipments, such things as follow have been added to the present problems: insufficient manpower; lack of water sources; obstacles to handle emergency calls; absence of tactics and instructions; and lack of self-extinguishing activities.*

*Considering such defects in current administration, recommendations have been made as follows:*

*1) reorganization of the Ministry of Home Affairs and local governments so that professional personnels may more efficiently contribute to the fire-fighting today; 2) enlargement and enforcement of research and education function; 3) establishment of more efficient allotment of manpower for the mission; 4) securing proper water systems; 5) developing tactics for response in emergency; 6) securing of co-ordination of fire-fighters and civilians.*

*In sum, ways of improving the attitudes of personnels engaged in fire-fighting; equipments, adequate training; and nation-wide telecommunication systems, have to be contrived for the future.*

## I. Introduction

### (1) Purpose of the study

The modern culture is built on the free usage of fire. The fire has become in our human history a necessary being in many ways and brought many benefits and troubles to our daily life. Nowadays scientific technologies have caused our environment to rapidly grow to the high-tech industrial society and have forced not only the buildings large, more complicated, higher, and deeper under the ground, but also have grown beyond present fire fighting capabilities. Thus the need to develop the ways with a maximum of safety and a minimum of damage is increasing day by day.

The mission of fire fighting should focus on a scientific approach to efficient management both for the present and the future. This study will seek to analyze and suggest improvements to the present fire fighting management organizations. This study may document epochial and eternal

improvements on fire administration.

## **(2) Method and unit of the study**

This study is aimed to historically analyze Korea's fire fighting administration and their effects on the present administration in four ways:

1. Organization.
2. Fire prevention administration.
3. Fire fighting administration.
4. Other incidental administrative practices.

Besides, we will briefly consider improvements in a way that will set a direction for the next ten to twenty years.

## **II. History of Fire Administration Development**

### **(1) A trace on the process of the development and function of fire administration**

During the Lee Dynasty, King Se-jong (1426) organized Kum-Hwa Do Gam (Fire Prevention Division) under the Byung-Jo (currently the Ministry of Home Affairs) for the first time in our history. At first slaves were selected as fire fighters who take care of all fire fighting jobs, however, in 1460, during the time of Japanese invasion, the Byung-Jo decided to use soldiers for extinguishing fires.

In 1439, during the Reign of King Se-Jong, in response to the nationwide drought and frequent incidences of criminal activities, police units were established in communities, and out of these persons, the first volunteer fire corps were organized.

In our country, the first organized public fire prevention division was established in 1908. Those who were chosen to be fire fighters were 60 members of the Royal Security Guard. That organization was called the Gun-Jung (Royal) Fire Fighter Corps. They were equipped with push-up pumps that had been imported from Japan.

After the annexation of our country to Japan, a Police Viceroy was placed in charge of fire fighting tasks. He attached a fire fighting unit to the police, and ever since then, fire fighting has been a part of the police's duties.

In 1925, Kyung-Sung Fire Station was established as our first modern fire fighting organization. At present, it was located at Tae-Pyung Ro, Seoul. By August 15, 1945, eight fire stations had been built all over the nation. The equipments used by them were hand carts, horse carts, and mechanical pumps that were introduced at that time. The number of fire plugs was increased to 7,788.

After 1945 Independence, under the U.S. Military Government, in 1945, the Fire Department was separated from the police, and it was established as an independent entity. In addition, Fire Fighting Committees were established in the capital and in the provinces. In 1947, the number of fire stations had increased from five to fifty.

In 1948, after the establishment of the Republic of Korea, the number of fire organizations was reduced, and again they became a part of the police organization. In 1975, fire administration became a part of the National Defense Organization. Such an evolution of fire administration may

be described as follows.

a. On November 4, 1948, a separate fire administration division was established in the Ministry of Home Affairs, the Police Division.

b. On February 17, 1955, the Fire Prevention Section was annexed to the Ministry of Home Affairs, the Police Headquarters.

c. On October 2, 1961, Fire Prevention Department was established in the Ministry of Home Affairs, Police Headquarters.

d. On August 30, 1970, Fire Headquarters was established in Seoul and Pusan.

e. On July 13, 1972, the Fire Academy was established as annexed to the Police Academy.

In 1950, the number of fire stations was reduced from 50 to 23. But, since 1961, it has again gradually increased, and thus there are now five Fire Headquarters and 83 Fire Stations.

## **(2) Characteristics of fire prevention administration**

Fire Prevention Administration has two characteristics, prevention and extinguishment of fires. Since the early 1970's, rapid industrial growth, urbanization, and the improved life style of people have created a huge demand for raw materials and energy sources. The need to provide storage for these materials has increased the chances of very hazardous fires. Fire prevention administration may be divided into three parts: 1) Fire Safety Management; 2) Hazardous Materials Safety Management; and 3) Advertising. First, fire safety management handles administrative activities, that is, providing guidances to minimize damage from fires, and maintaining fire extinguishing equipments as well as life-saving equipments. Second, Hazardous materials safety management controls the manufacturing and storing of flammable toxic materials such as oils and chemicals. Third, advertising seeks to educate people on the hazards of fires and on what to do in case a fire breaks out.

Fire extinguishing administration takes the responsibility for deploying fire fighting apparatus to the scene of any fire in a quick and safe manner. It has been determined that the first five minutes of a fire require at least five apparatus combating the flames on the scene. Damages to life and property usually increase dramatically after the five minutes of a fire.

## **(3) Problems of fire prevention and fire control management**

Fire prevention management is divided into the safety checks by the "Korea Fire Insurance Companies' Association", and by police stations. Fire prevention management is also responsible for investigating petroleum storage. The laws specify those places that should be covered by police stations' safety checks, as convention centers, hotels, market places, factories, and oil-storaring areas. Hazardous areas are required to be checked once a year. However, there are various methods of such checks, and some are too complicated. As a result, it is impossible to expect a perfect system for now, especially due to the lack of manpower. By checking only once a year, those hazards pointed out rarely come to the attention of managers. Thus hazardous materials are continuing to be built up. Moreover, unauthorized oils and other hazardous materials have been dumped unlawfully and it is now difficult to tell what the real conditions are. Even though police stations are assigned to supervise their member crews into inspections and fire fighters are supposed to insure the proper carrying out of fire inspections, however, due to the lack of manpower and overlapped inspections, efficiency of their inspections may be lowered. The Korea Fire Insurance Companies' Association holds its inspections in October in Seoul, Pusan, Taegu, Incheon, Kwangju, Daejeon, and Jeonju, on those specifically designated buildings that are required to be checked by fire insu-

rance companies. Fire stations are also supposed to carry out equivalent inspections, but the different methods used do not lead to a co-ordinated efficient system in view of social well-being. Building managers are obliged to conduct inspections, for those buildings that are above 1,000 Pyung (3,300m<sup>2</sup>), or with residences 50 or over or with people 200 or more. Even though these managers should check building fire equipments, and perform fire drills, many managers do not consider these tasks urgent, and they seldom notify the owners of the defects. Moreover, fire prevention managers tend to ignore the need to request replacement of defective equipments.

#### **(4) Problems of researching causes of fire**

The purpose of researching causes of fires is to improve and develop materials that will help to prevent fires and fire extinguishing methods by examining them in depth. To clarify the causes of a fire, vast knowledge and experience is needed in such a research since investigations are always held in the aftermath of a blaze in most of the cases. But, in the capital city and in other cities, fire stations are not equipped with a scientific cause-finding laboratory. Therefore, in case of a complicated fire, it is almost impossible to scientifically deduce the exact causes of a fire and there is a worry that we may make false assumptions on them.

### **III. Fire Extinguishing Tactics and Operations**

#### **(1) Lack of tactics**

Since 1987, only 40% of the required manpower in the fire fighting field is filled because of budget constraints. Fire fighters work about 33 hours a shift in summer, and in winter, they work about 72 hours a shift. Because of such a situation, fire fighters' morale is low and some of them are dissatisfied with their jobs and thus consistently seek to take other jobs.

#### **(2) Worn out equipments**

Due to budget constraints, only 79% of the demand for tools and equipments are met. In the case of special equipments, the situation is worse. For example, Seoul has only fire high-ladder fire engines out of required 92. High-ladder fire engines are an absolute necessity for high-rise fires. There are 568 units of equipments that are over 10 years old, 23% of all the units. These include the equipments we got from the United States that were used during the World War II. Such problems have forced delays in accomplishing the fire fighters' missions.

#### **(3) Lack of established water sources for combating fires**

Water for fire is one of the three elements required for fire fighters to do their work. Often it is decisive for the success or failure of fire fighters' tactics. Figures since 1987 indicate that sources of water for extinguishing fires stand only at 60% of the requirement. Further, due to the longer distances from water sources to the scene of fire, fire fighting units often have been caught in traffic jams and thus has caused a high rate of damages to equipments.

#### **(4) Emergency calls and obstacles to meet them**

Some of the obstacles noted in responding to a fire report are: narrow roads and alleys; high-voltage electrical wirings; illegally parked vehicles at roadsides; garden stone decorations in front of buildings; and high levels on the outskirts of cities. They altogether hinder our efforts to extinguish fires.

### **(5) Absence of tactics and instructions**

Noted in some cases are wrongful judgement of commanders, lack of convictions, absence of planning, and issuance of unreasonable orders, causing division of authorities in the view of fire fighters. Unnecessary damages to lives and properties could have been caused by the commanders' ignorance of tactics for coping with fires.

### **(6) Lack of activities in self extinguishing**

There are 2,823,345 fire fighters from 34,869 units belonging to volunteer corps, company fire extinguishing corps, and privately employed firemen. On the surface this appears to be a vast organization, but, unfortunately, they are worthless, if not dangerous, waste of labor in a sense. They are hopelessly ignorant of fighting tactics. Some 10,144 fires break out every year resulting in the loss of about 1,474 lives and monetary damages of 14,700,000 won.

### **(7) Ways of improving the fire prevention administration**

#### 1. Reorganization and stream-lining of fire prevention administration

Improvements on the system of fire prevention would assist the Ministry of Home Affairs and the provinces nation-widely in obtaining and training professional firemen and administrative personnels for the end of the 20th Century's fire fighting. This will have a positive effect on fire fighters and will assure desirable policy-making, planning, and responsibility for execution of fire fighting jobs. In this context, there should be an assistant fire administration corps for local governments. Ideally, fire prevention organizations should be promoted from a Division to a Fire Bureau in the Ministry of Home Affairs. The Fire Prevention Department should be promoted to the level of Fire Prevention Division. The Fire School which is under the direct control of the Minister should be extended to a Fire College and the Fire Research Institute should be established under the direct control of the Fire Bureau Chief. The Fire Departments in 9 provinces should be enlarged to Fire Headquarters in order to give free will of each administration in the countryside to establish fire stations or fire offices according to the size of the country. This will give consistency to fire administration.

#### 2. Enlargement and enforcement of research and education function

A Fire Prevention Research Institute should be established and the present Institute of Korea Fire Research should be reorganized into a field research institute under the control of the Institute of Korea Fire Research with the support of government so that scientific and academic research may be encouraged. To follow up and help maintain proficiency of our professional firemen in the country, there should be regional Firemen's Education Centers in the city and provinces, for instance, in Pusan, Daejon, and Kwangju, so that fire fighters in each region may be educated without worrying of finances. An education center in the capital city should take the charge of educating officers so that they may have the abilities as trainers at the regional education centers. In addition, for civilian fire safety managers, it seems necessary for us to consider establishing a fire safety managers' course in the college.

#### 3. Prevention of fires

Recent demonstrations have created a situation that threatens people's lives and properties. We should recover the authority for securing the administration of people's fare-well. Additionally, means to improve fire inspecting system should be contrived for this purpose.

### **(8) Establishment of fire extinguishing system**

To avoid over-working of our firemen, the ratio in the allotment of manpower should be raised

to 1 fireman per 2,000 people. Above all, the numbers of firemen presently working at fire-stations should be re-arranged so that proper work hours can be given to our firemen. Strengthening of fire fighting equipments may be accomplished by adding new equipments to the present 70% of the requirement as soon as possible. Special equipments that are 10 years or older should also be replenished as soon as possible. For this, government should invest in and subsidize private repair shops for the maintenance of specialized equipments.

**(9) Securing proper fire extinguishing water systems**

We can secure our water supply system by gradually reducing the usage of water up to 39% of those areas in 2,059 places. (Total supply of 665,000 tons)

**(10) Positive response in emergency - moving and extinguishing tactics**

In narrow high-level places that fire trucks can not approach we have to use small farmingstyle tractors or placing pressure pumps and water pipes. Portable water-saving tanks should be placed in these areas. Above all, for large parking places, large buildings, and for areas having high-voltage electrical wires, discussions should be held with the people in charge of helping prepare them in emergency in order to increase the number of people who understand the importance of these problems and to obtain their co-operation.

**(11) Usage of extinguishing tactics and building authorities' co-ordination**

Fire commanders should judge the present conditions of the buildings' fire safety and give correct directions to fire fighting units in case of such a fire. Successful extinguishing of fires entail checking of the fire points, ensuring quick water supply, and courageous life-saving efforts. These may be assured by a powerful building management authorities.

**(12) Activation of self-extinguishing activities**

Security of our life free from complicated and large-scale fires is dependent upon the education of people in ways of keeping their homes, work-places and communities free from the hazards of fires. Using voluntary fire corps in work-places and communities, hazards of fires should be checked in these places. In a home, it seems desirable that a family member should be chosen to check fire hazards. Besides, all the mature persons should know what jobs they will do in case of a fire. By these ways, we may keep ourselves free from damages from fires and loss of lives.

**(13) Effectiveness of life-saving services**

For an administration that truly serves people, we must make proper choices of fire fighters giving them more than 8 weeks of education in life saving skills and we must guarantee them of an eight-hour working day. This means that the number of fire fighters needed could be secured by giving all the people life-saving services even to the outskirts of the cities. We should establish a "Life Relief Corps" at all the fire-stations.

## **IV. Incidental Administration**

Incidental administration working out of Mission Stations carries out patient carrying duties during flood or storm emergencies. At the outset, the Life Relief System was developed because of the curfew that was in effect from mid-night to 4 a.m. By law, fire engines and police vehicles were the only ones allowed on the roads during these hours. Since medical emergencies occur without regard to time and to the law, life relief duties were assigned to the fire departments. In 1981, the

curfew was removed and the Life Relief services were then assigned the duty of transporting poor patients to hospitals. As of late 1987, 118 Life Relief corps were operating out of 83 fire-stations nation-widely, and 39,029 patients received this service. Lack of manpower, lack of required knowledge, and over-works of firemen were constant worries in responding to accidents in the outskirts and countryside. Thus services to these areas were rarely provided.

#### **(1) Problems of life relief duties**

Even though the main charge of this purpose is given to fire-stations, they are not equipped with basic fire preventing knowledge. In serious hazardous situations, it is a worry that effective actions may not be taken.

#### **(2) The problems of preventing natural fires**

The original concept of fire prevention was based on local patriotism with good equipments. Rapidity and willingness to respond to fire calls were main elements in them. Plans for coping with such situations were slated to be introduced in 1966, but we had to wait more to secure instructions and voluntary co-operation that were indispensable to fighting these fires. After all, in practical applications, these efforts were proved not to be very effective.

#### **(3) Best training and education**

Education and training help firemen develop unlimited creative thinking power. Central and provincial educational centers should be equipped with scientific and experimental materials that are required to teach all firemen as well as to breed future instructors. It is important to provide opportunities to the persons with potentialities for studying in related colleges and studying further abroad.

Local units' self fire preventing organizational members should be gathered together at the educational centers in order to develop in them commanding authorities and instructional abilities. For this, considering their earnings for living, they should be paid for the education so that they may concentrate on their studies. Companies and private fire prevention organizations should educate their members by dispatching them to such educational facilities so that they may learn to operate their own equipments by exercising repeatedly on a regular basis.

### **V. Future Prospects of the Fire Preventing Administration**

#### **(1) A prediction on the future**

It is quite possible, within 20 years from now, our land will become a highly intelligent and industrial country. These developments will inevitably bring in the increases of explosives and flammable materials as well as an increase in hazards to lives and properties.

#### **(2) Response to the prospective future**

The government-controlled "Information Services Direct Networks (ISDN)" will be very useful for fire preventing administration when placed in firestations. Fire Headquarters and other mission offices will be connected together and they will work more efficiently and scientifically together. It will thus provide a successful fire preventing services to the people.

### **VI. Conclusion**

The future secured by fire prevention administration will depend upon how well professional fire

fighters scientifically function and how well they are centrally organized. Professional and scientific survey on manpower, equipments and available water supply will reinforce the administrative efforts in creating an epochial fire prevention organization. Further development of our society and people's improved awareness of fires through educational trainings on fires and strengthened government's fire preventing functions will portend a safer, less hazardous future. Computerized telecommunications and fire information networks, robots with human functions should be linked to the current efforts as the third part persons. These technologies will install confidence in fire extinguishing administration without additional manpower. Such a change will help accomplish the goal of the future fire prevention administration as well.